Claims:

1. Implant plate, having drill holes for bone screws, for stabilizing a fracture of an upper-arm head and/or a fracture of a proximal upper arm,
characterized in that
a spoon-shaped implant plate (1) comprises a head-end portion (2) and a shaft-end portion (3), each having at least one drill hole (5) and/or an oblong hole (5);
at least one raised receiving member (6) for a flexible fastening member (29) is disposed at an outer edge or contour of a side of the head-end portion (2) of the implant plate (1) that faces away from a bone (4);
each receiving member (6) has an aperture (7) extending substantially parallel to an outer edge or contour (8), and to the side of the head-end portion (2) of the implant plate (1) that faces away from the bone (4), for threading, passing-through, and drawing together the flexible fastening member (29).

2. Implant plate according to claim 1,
characterized in that
an outer edge (9) of the aperture (7) in the receiving member (6) for the flexible fastening member (29) has been blunted, rounded, and/or smoothed on an entry and exit side.

3. Implant plate according to claims 1 and 2,
characterized in that
a thickness of material of the implant plate (1) including the head-end portion (2) and the shaft-end portion (3) is substantially uniform;
the head-end portion (2) of the implant plate (1) is widened to be of spoon-shape, and the shaft-end portion (3) is designed to be comparatively narrower; and

all receiving members (6) for the flexible fastening member (29) are spaced along an outer edge or contour (8) of the head-end portion (2).

4. Implant plate according to claims 1 to 3,
characterized in that
the aperture (7) of the receiving member (6) is designed to be a drill hole or an eyelet, or of tubular shape, or shaped as a round hook.

5. Implant plate according to claims 1 to 4,
characterized in that
the receiving members (6) are made from strip material (42) by laser-treatment, punching, cutting, deep drawing, bending and edge-rolling; and
the apertures (7) are made by drilling, punching, laser-treatment, deep drawing, or bending and edge-rolling.

6. Implant plate according to claims 1 to 5,
characterized in that
the receiving members (6) consist of externally prefabricated ridges (10) with drill holes (14), tubular receiving members (16), or round hooks (25), with or without a base (12); and
the receiving members (6) are welded, pressure-welded, soldered, screwed, or riveted onto predetermined locating positions (19) close to an edge of the strip material (42).

7. Implant plate according to claims 1 to 6,
characterized in that
all edges and rims (8, 9, 11) intended to contact the flexible fastening member (29) and human tissue have been blunted, rounded, and/or smoothed.

8. Implant plate according to claims 1 to 7,
characterized in that

the head-end portion (2) of the implant plate (1) has a blade (13) disposed along an extension of a longitudinal axis (A-A), the blade having a sharp edge at one end.

9. Implant plate according to claim 8,
characterized in that
the blade (13) has at least one drill hole (15), having at least one screw thread into which upper-arm head-screws extending from the head-end portion (2) or head portion (2) of the implant plate (1) may be screwed.

10. Method for manufacturing implant plates,
characterized in that
a spoon-shaped implant plate that is provided with drill holes and/or oblong holes for bone screws is fitted with at least one receiving member for a flexible fastening member on a side of an implant plate facing away from a bone; and
the receiving member is provided with an aperture extending substantially parallel to an upper and a lower side, and also parallel to an outer edge or contour, of the implant plate.

11. Method according to claim 10,
characterized in that
a metallic strip material that is compatible with a the human body, such as implant steel, titanium, or titanium alloys, is made available, cut to length or as a coil;
the strip material is processed by program control, semi or completely automatically in a drilling, laser-treatment, and/or punching device, to produce necessary apertures of relatively large diameter for bone screws;
the strip material is simultaneously or subsequently processed in a drilling, laser-treatment, and/or punching device, to produce necessary apertures of relatively small diameter for flexible fastening members;

simultaneously or subsequently, forming-cuts such as parallel cuts, oblique cuts, partial cutouts, and the like, as needed for forming the receiving members, and possibly also the blade, are made close to an edge in a punching, laser-treatment, or cutting device, and the like;

regions of the strip material, prepared for forming the receiving members close to the edge, are deep drawn, bent, edge-rolled, angled, and the like in a direction of the side of the implant plate facing away from the bone;

the apertures of the receiving members, formed by drilling, punching, laser-treatment, deep drawing, bending, edge-rolling, angling off, and the like, are disposed to extend substantially parallel to an upper and lower side, and also parallel to an outer edge or contour of the implant plate; and

all edges and rims of the implant plate are blunted, and/or rounded, and also smoothed.

12. Method according to claims 10 and 11,
characterized in that
a spoon-shaped implant plate, provided with drill holes for bone screws, is provided with at least one externally formed receiving member having an incorporated aperture for a flexible fastening member on the side of the implant plate facing away from the bone; and
the aperture in the receiving member is disposed to be substantially parallel to the upper and lower side, and also parallel to the outer edge or contour of the implant plate.

13. Facility for manufacturing implant plates according to claims 9 to 11,
characterized by using

(a) at least one stacking magazine (40), at least one uncoiling device (41) for holding available and supplying metallic strip material (42),

(b) if required, a rolling mill (44) for at least one-sided surface profiling of the strip material (42), e.g. for producing naps, discontinuous groove-shaped or diamond-shaped profiles, and the like, on the side facing a bone (4),

(c) if required, a drilling, laser-treatment, and/or punching device (45, 46, 47), in particular, a suitable automatic machine for producing apertures (7), positioned holes, or drill holes (14, 23), and the like;

(d) if required, a laser-treatment, punching, and/or cutting device (46, 47, 48), in particular, a suitable automatic machine for preparing the strip material (42) for forming raised receiving members (6) on a side of the implant plate (1) facing away from the bone, and also, if required, a blade (13) extending from a spoon-shaped portion (2) of an implant plate blank (1);

(e) if required, deep drawing, bending, and edge-rolling devices (49, 50, 51), in particular, a suitable automatic machine for shaping the raised receiving members (6) on a side of the implant plate blank facing away from the bone (4), and also, if required, U, T, or I shaped profiles on the blade (13) by cold-forming;

(f) if required, further laser-treatment, punching, and/or cutting devices (46, 47, 48), in particular, a suitable automatic machine for producing an outer contour (8) and singling implant plate blanks (1);

(g) if required, at least one small-parts stocking device (43) for externally manufactured eyelets, hooks, or tubular sections;

(h) if required, welding, pressure welding, soldering, screwing, and/or riveting devices (60, 61, 62, 63, 64), in particular, a suitable automatic machine for attaching externally manufactured receiving members (6) for flexible fastening members (29) onto the side of the implant plate blank (1) facing away from the bone (4);

(i) if required, a cold drawing device (65), in particular, a suitable automatic machine for producing weakened material regions (30) extending across a longitudinal axis, and sharpening a free end of the blade (13), and also forming the strip material (42) to a shallow channel-shaped profile, substantially no longer extending to include the width of the blade (13);

(j) burr removing, rounding, blasting, and/or cleaning devices (53, 54, 55, 56), in particular, a suitable automatic machine for removing sharp edge regions (8, 9, 11) from the implant plates (1);

(k) if required, a coating device (57) for surface finishing, in particular, galvanic, electro-chemical, and vacuum-technological coating devices; and also

(l) a sterilizer (58) and/or sterile packing device (59), in particular, a suitable automatic machine.

14. Use of the implant plate (1) according to claims 1 to 9, and also of implant plates (1) directly produced by process and/or plant technology according to claims 10 to 13 from metallic strip material (42) consisting of implant steel, titanium, or titanium alloys, in surgery and/or orthopedics for stabilizing a fracture of an upper-arm head and/or a fracture of a proximal upper arm.